

WHAT IS CLAIMED IS:

1. A DNA segment comprising an isolated gene that encodes an LTBP-2 or LTBP-3 protein.

2. The DNA segment of claim 1, comprising an isolated gene that encodes an LTBP-2 protein.

3. The DNA segment of claim 2, comprising an LTBP-2 gene that encodes an LTBP-2 protein or peptide that includes a contiguous amino acid sequence from SEQ ID NO:2.

4. The DNA segment of claim 3, comprising an LTBP-2 gene that includes a contiguous nucleic acid sequence from between position 1 and position 5499 of SEQ ID NO:1.

5. The DNA segment of claim 3, comprising an LTBP-2 gene that encodes an LTBP-2 protein of about 1833 amino acids in length.

6. The DNA segment of claim 5, comprising an LTBP-2 gene that includes the contiguous nucleic acid sequence from position 1 to position 5499 of SEQ ID NO:1.

7. The DNA segment of claim 1, comprising an isolated gene that encodes an LTBP-3 protein.

8. The DNA segment of claim 7, comprising an LTBP-3 gene that encodes an LTBP-3 protein or peptide that includes a contiguous amino acid sequence from SEQ ID NO:4.

5 9. The DNA segment of claim 8, comprising an LTBP-3 gene that includes a contiguous nucleic acid sequence from between position 1 and position 3753 of SEQ ID NO:3.

10 10. The DNA segment of claim 8, comprising an LTBP-3 gene that encodes an LTBP-3 protein of about 1251 amino acids in length.

11. The DNA segment of claim 10, comprising an LTBP-3 gene that includes the contiguous nucleic acid sequence from position 1 to position 3753 of SEQ ID NO:3.

12. The DNA segment of claim 1, positioned under the control of a promoter.

13. The DNA segment of claim 12, positioned under the control of a recombinant promoter.

14. The DNA segment of claim 12, wherein the isolated gene is positioned, in reverse orientation, under the control of a promoter that directs the expression of an antisense product.

15. The DNA segment of claim 13, further defined as a recombinant vector.

16. A recombinant host cell comprising a DNA segment that comprises an isolated gene that encodes an LTBP-2 or LTBP-3 protein or peptide.

17. The recombinant host cell of claim 15, further defined as a prokaryotic host cell.

18. The recombinant host cell of claim 15, further defined as a eukaryotic host cell.

19. The recombinant host cell of claim 15, wherein the DNA segment is introduced into the cell by means of a recombinant vector and the host cell expresses the DNA segment to produce the encoded LTBP-2 or LTBP-3 protein or peptide.

20. The recombinant host cell of claim 18, wherein the expressed LTBP-2 or LTBP-3 protein or peptide includes a contiguous amino acid sequence from SEQ ID NO:2 or SEQ ID NO:4.

21. A method of using a DNA segment that includes an isolated gene that encodes an LTBP-2 or LTBP-3 protein or peptide, comprising the steps of:

- (a) preparing a recombinant vector in which an LTBP-2- or LTBP-3-encoding DNA segment is positioned under the control of a promoter;
- (b) introducing said recombinant vector into a recombinant host cell;
- (c) culturing the recombinant host cell under conditions effective to allow

expression of an encoded LTBP-2 or LTBP-3 protein or peptide; and

(d) collecting said expressed LTBP-2 or LTBP-3 protein or peptide.

22. A recombinant LTBP-2 or LTBP-3 protein or peptide prepared by expressing an LTBP-2- or LTBP-3-encoding DNA segment in a recombinant host cell and purifying the expressed LTBP-2- or LTBP-3 protein or peptide away from total recombinant host cell components.

23. A method for detecting an LTBP-2 or LTBP-3 nucleic acid segment in a sample, comprising the steps of:

(a) obtaining sample nucleic acids from a sample suspected of containing an LTBP-2 or LTBP-3 nucleic acid segment;

(b) contacting said sample nucleic acids with an isolated LTBP-2 or LTBP-3 nucleic acid segment under conditions effective to allow hybridization of substantially complementary nucleic acids; and

(c) detecting the hybridized complementary nucleic acids thus formed.

24. A nucleic acid segment characterized as:

(a) a nucleic acid segment comprising a sequence region that consists of at least 17 contiguous nucleotides that have the same sequence as, or are complementary to, 17 contiguous nucleotides of SEQ ID NO:1 or SEQ ID NO:3; or

- (b) a nucleic acid segment of from 17 to about 10,000 nucleotides in length that hybridizes to the nucleic acid segment of SEQ ID NO:1 or SEQ ID NO:3, or a complement thereof, under standard hybridization conditions.

25. The nucleic acid segment of claim 23, wherein the segment comprises a sequence region of at least 17 contiguous nucleotides from SEQ ID NO:1 or SEQ ID NO:3 or a complement thereof.

26. The nucleic acid segment of claim 23, wherein the segment hybridizes to the nucleic acid segment of SEQ ID NO:1 or SEQ ID NO:3 or a complement thereof.

27. The nucleic acid segment of claim 23, wherein the segment comprises a sequence region of at least 17 contiguous nucleotides from SEQ ID NO:1, or the complement thereof; or wherein the segment hybridizes to the nucleic acid segment of SEQ ID NO:1, or the complement thereof.

28. The nucleic acid segment of claim 23, wherein the segment comprises a sequence region of at least 17 contiguous nucleotides from SEQ ID NO:3, or the complement thereof; or wherein the segment hybridizes to the nucleic acid segment of SEQ ID NO:3, or the complement thereof.

29. The nucleic acid segment of claim 23 wherein the segment comprises a sequence region of at least about 25 nucleotides; or wherein the segment is about 25 nucleotides in length.

30. The nucleic acid segment of claim 28, wherein the segment comprises a sequence region of at least about 50 nucleotides; or wherein the segment is about 50 nucleotides in length.

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31. The nucleic acid segment of claim 29, wherein the segment comprises a sequence region of at least about 100 nucleotides; or wherein the segment is about 100 nucleotides in length.

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32. The nucleic acid segment of claim 30, wherein the segment comprises a sequence region that consists of the 5499 contiguous nucleotides of SEQ ID NO:1, or the complement thereof.

33. The nucleic acid segment of claim 30, wherein the segment comprises a sequence region that consists of the 3753 contiguous nucleotides of SEQ ID NO:3, or the complement thereof.

34. The nucleic acid segment of claim 23, wherein the segment is up to about 10,000 basepairs in length.

35. The nucleic acid segment of claim 33, wherein the segment is up to 5,000 basepairs in length.

36. The nucleic acid segment of claim 23, further defined as a RNA segment.

37. A purified antibody that binds to an LTBP-3 protein or peptide.

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38. The antibody of claim 37, wherein the antibody is linked to a detectable label.

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39. An immunodetection kit comprising, in suitable container means, an LTBP-3 protein or peptide, or a first antibody that binds to an LTBP-3 protein or peptide, and an immunodetection reagent.

40. A method for identifying a transforming growth factor β protein in a sample, comprising contacting said sample with an LTBP-2 or LTBP-3 protein under conditions effective to allow binding and detecting the protein so bound.

41. A method for purifying transforming growth factor β (TGF β) protein in a sample, comprising:

- (a) contacting a sample suspected of containing TGF β β protein with an LTBP-2 or LTBP-3 protein under conditions effective to allow specific binding; and
- (b) collecting the bound TGF β , substantially free from the non-bound components.

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42. A composition comprising a purified murine LTBP-2 or LTBP-3 polypeptide.

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